Expansive soil in Al-Madinah, Saudi Arabia

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Abstract: It has become evident that construction work carried out in greenish-brown clay soils of Al-Madinah city has met many problems arising from the expansive characteristics of these soils. This paper concentrates on the identification of the mineralogical composition and geotechnical properties of the expansive soils in the Al-Madinah area, X-ray diffraction analysis indicates that Al-Madinah soils consist of quartz, feldspar, smectite, calcite, kaolinite and some chlorite. Atterberg limits and clay fractions indicate that the swelling potential of Al-Madinah soils is high. Direct measurements of axial free swelling, percentage of swell, and swelling procedure indicate that Al-Madinah soils can be characterized as highly expansive.